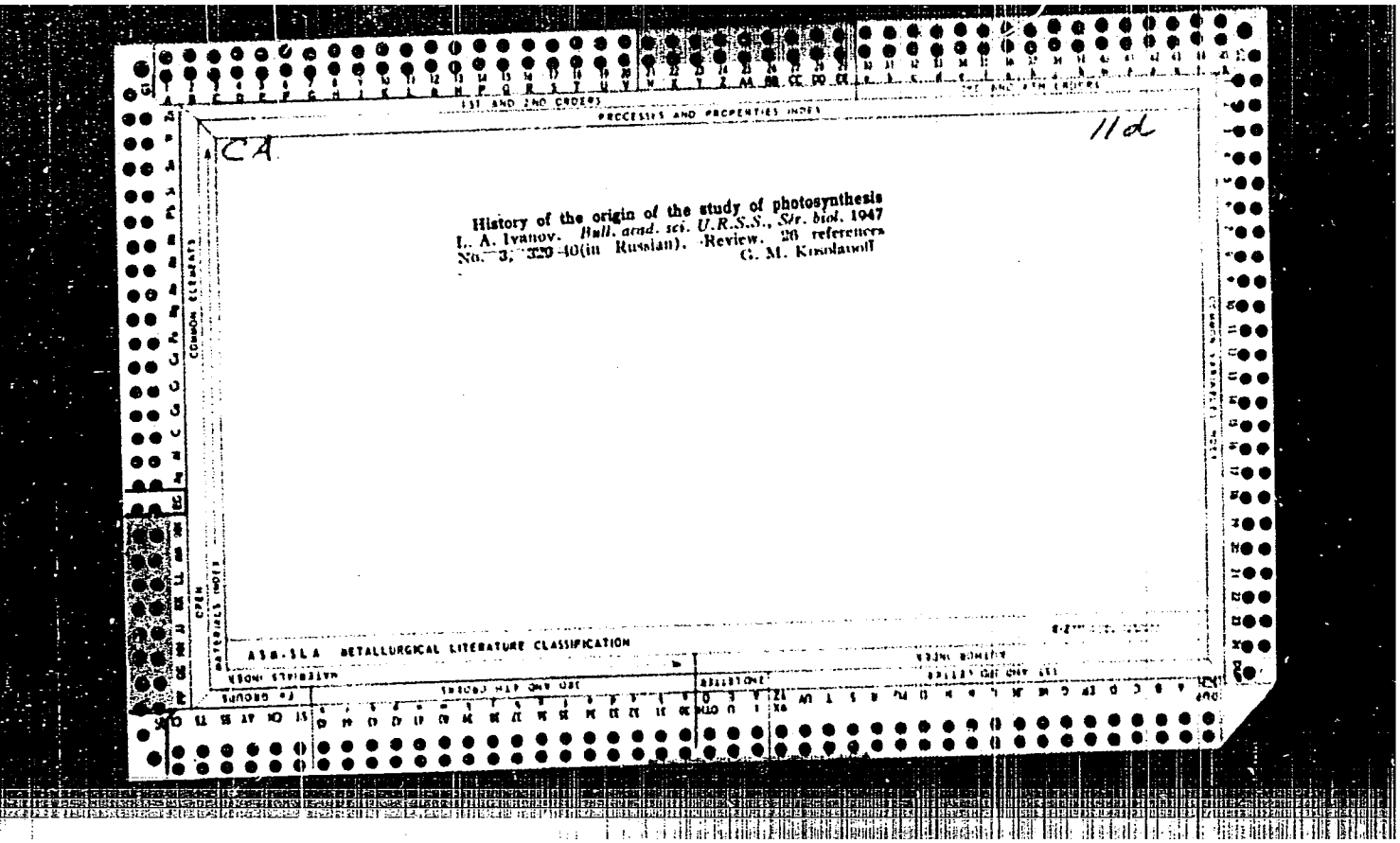


CA

11d

History of the origin of the study of photosynthesis
I. A. Ivanov. *Bull. acad. sci. U.R.S.S., Sér. biol.* 1947
No. 3, 329-40(in Russian). Review. 20 references
G. M. Kondratieff

25455 Ivanov, I. A. i Kossovich, N. I. Zametka oprimenenii ''Asimilyatsionnoy Kolby'' v Laboratornykh Usloviyakh. Botan. Zhurnal, 1948, No. 1, s 92

SO: Letopis' Zhurnal Statey, No. 30, Moscow, 1948

IVANOV, L.A.

Moisture of the trunk wood in relation to the water exchange in the tree. Trudy Inst.fiziol.rast. 6 no.1:9-44 !48. (MLRA 9:9)

1.Institut fiziologii rasteniy imeni K.A.Timiryazeva AN SSSR (Trees) (Plants, Movement of fluids in) (Wood--Moisture)

TIMIRYAZEV, Kliment Arkad'yevich; IVANOV, L.A., nauchnyy red.

[Plant life. Ten popular lectures with a supplement of four public lectures] Zhizn' rasteniia. Desiat' obshchedostupnykh chtenii s prilozheniem chetyrekh publichnykh lektsii. Moskva, Gos.izd-vo detskoi lit-ry, 1949. 254 p. (MIRA 12:10)

(Botany--Physiology)

Ivanov, L. A.

7.4-223

Ivanov, L. A., Otnoshenie k vlage drevesnykh porod, primeniaemykh pri stepnom [lesostepnom] razvedenii. [Relationship of types of forest trees to the moisture used in afforestation of steppes.] *Akademiia Nauk SSSR. Institut Lesa, Nauchnye Voprosy Polezashchitnogo Lesorazvedeniia*, No. 1:109–124, 1951. 5 tables, bibliog. p. 123-124. DLC.—Attempt at a literature review for the years 1890–1940 on transpiration of a great many kinds of trees and shrubs listing 25 Russian papers, and but one obsolete foreign source. Some of these papers deal with the influence of meteorological conditions and soil moisture on transpiration. *Subject Headings:* 1. Transpiration 2. Soil moisture 3. Forest influences.—*A.A.*

551.573:551.588.6

Ivanov, L. A.

7.4-222 551.573

Ivanov, L. A.; Silina, A. A.; Zhmur, D. G. and Tselniker, Yu. L., Ob opredelenii transpiratsionnogo raskhoda drevostoem lesa. [On the determination of transpiration by a forest stand.] *Botanicheskii Zhurnal*, Moscow, 36(1):5-20, 1951. 12 tables, refs. D.C.—Method of quick weighing of tree leaves tested and applied for a region near Moscow. Transpiration intensity of 17 tree species was determined in more than 6000 cases. Statistical tabulation of observational materials shows that during the growing season good relation exists between the air temperature and the transpiration intensity. Correlation coefficients were 0.65-0.95. Transpiration rates at sufficient moisture supply are presented for each species, arranged by temperatures from 4° to 29°C. *Subject Heading:* 1. Transpiration of forests.—*N. T. Zdorov.*

I. Ivanov

7.1-270

Ivanov, L. A., Silina, A. A. and Tsel'niker, Yu. L., O transpiratsii polezashchitnykh porod v ustoĭchivykh Derkul'skoĭ stepi. [Transpiration of wind shelter plants under conditions of the Derkul' steppe.] *Botanicheskii Zhurnal*, Moscow, 37(2):115–127, 1952. fig., 8 tables, refs. DLC—Transpiration rates of different kinds of trees are given for a region of ample moisture supply (near Moscow) and the Derkul' steppe. Temperature, solar radiation and saturation deficit are higher in the steppe, but the transpiration nevertheless lower. Correlation with temperature is high at sufficient moisture supply (up to 0.98) and low or even negative in the steppe. No relation to wind speed. *Subject Headings:* 1. Transpiration of trees 2. Moscow Region 3. Derkul' Steppe, Kazakhstan.—*A.A.*

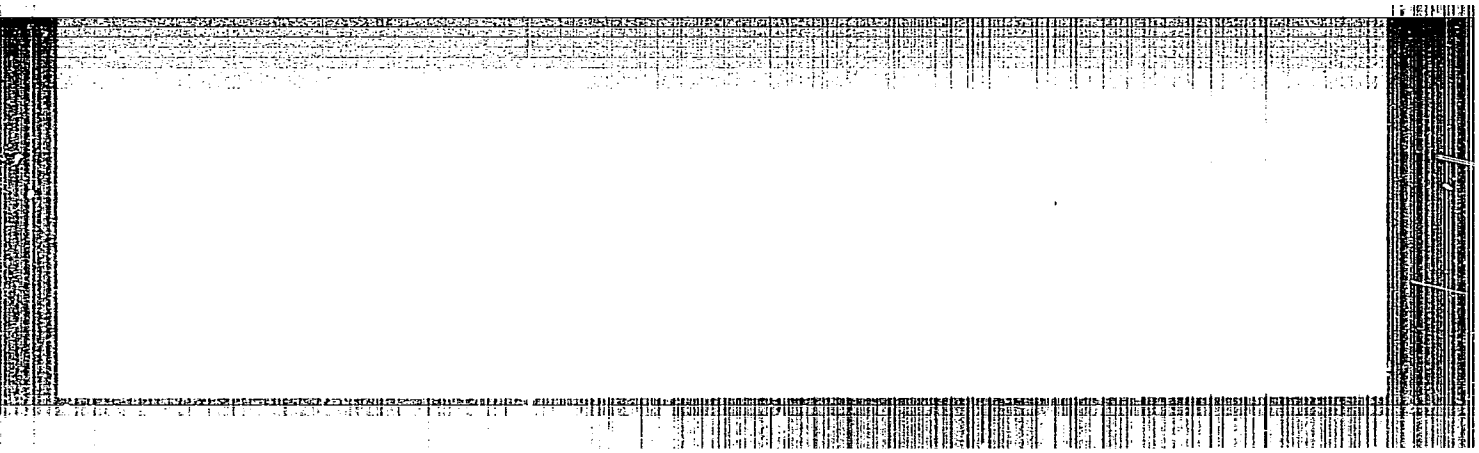
631.573:551.579.5

(2)

IVANOV, L.A.

On the history of methods for determining transpiration in natural growing conditions. Bot.zhur. 38 no.2:246-247 Mr-Ap '53. (MLRA 6:6)

1. Institut lesa Akademii Nauk SSSR, Moskva. (Plants--Transpiration)



APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000619110005-8"

IVANOV, L.A., chlen-korrespondent.

Suction apparatus of the roots of tree varieties in the Soviet Union. Dokl. AN SSSR 93 no.4:713-716 D '53. (MLRA 6:11)

1. Akademiya nauk SSSR. (Trees) (Roots (Botany))

IVANOV, L.A.

Measuring physiological radiation in ecological research by means of the decoloration of chlorophyll. Fiziol.rast. 1 no.2:181-187 N-D '54. (MLRA 8:10)

1. Institut lesa Akademii nauk SSSR, Moscow
(Photometry) (CHlorophyll)

IVANOV,L.A.; SILINA,A.A.

Actinometric determination of forest transpiration in connection with energy relations in different forested areas. Fiziol.rast. 2 no.4:313-319 Jl-Ag'55. (MLRA 8:12)

1. Institut lesa Akademii nauk SSSR, Moscow
(Plants--Transpiration)

K-1

USSR / Forest Science. General Problems.

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 77476

Author : Ivanov, L. A.
Inst : Forest Institute AS USSR
Title : On the Transpiration of Shelterbelt Species in the Derkul' Steppe

Orig Pub : Tr. In-ta lesa. AN SSSR, 1956, 30, 41-69

Abstract : On the basis of investigations of the transpiration of shelterbelt species, with a comparison of field consumption of moisture with total evaporation, it is stated that a forest consumes moisture almost as much or somewhat less than grass or field vegetation of treeless areas of the steppe and forest-steppe zones. The increase of the forest area cannot cause drying of the steppe or forest-steppe. The full consumption of moisture by the forest in the forest zone exceeds the total evaporation of open areas

Card 1/2

Abs Jour : Ref. Zhur - Biologiya, No 17, 1958, No. 77476

which points to the swamp-decreasing and drying role of the forest in this zone. A decrease of the area of firs and pine plantations can lead to swamping. Bib. 41 titles.

IVANOV, L.A.

Method of determining transpiration for cutoff shoots.
Bot.zhur.41 no.2:219-220 F '56. (MIRA 9:7)

1.Institut lesa Akademii nauk SSSR, Moskva.
(Plants--Transpiration)

IVANOV L. A.

USSR/Physiology of Plants. Water Regimen I-3

Abs Jour : Ref Zhur-Biologiya, No 2, 1958, 5671

Author : L. A. Ivanov
Inst : Not given
Title : On the Application of Paraffin in Measuring Transpiration on Cut Shoots (Reply to M. S. Rodionov)

Orig Pub : Fiziol. rasteniy, 1957, 4, No 3, 293

Abstract : It is pointed out that in measuring transpiration on cut shoots it is possible to get along without paraffin only if the moisture content in the soil is high. Normally the cutting of shoots without paraffin is accompanied by rapid changes in transpiration.

Card 1/1

Ivanov, L.A.

USSR/Plant Physiology - Water Regimen I.

Abs Jour : Ref Zhur - Biol., No 18, 1958, 82019

Author : Ivanov, L.A.

Inst : Forest Institute, AS USSR

Title : Transpiration Resistance and How High and Low Temperatures Affect It.

Orig Pub : Fiziol. rasteniy, 1957, 4, No 5, 409-416

Abstract : The methods of determination of transpiration resistance (I) in a living leaf and in ground mass were described. Experimental data is given on the increase of I when the wind blows, with a temperature increase up to 30-45° (after dry winds or artificial heating of leaves of wood species), as well as when the temperature drops below 0°. The dependence of I on morphological, physiological and anatomical peculiarities of the leaves, on the

Card 1/2

IVANOV, L.A., otv.red.; CHERNOV, G.N., red.izd-va; KASHINA, P.S., tekhn.red.

[Physiological principles of the growth of woody plants] Fiziologicheskie osnovy rosta drevesnykh rastenii. Moskva, 1960. 112 p. (MIRA 14:2)

1. Akademiya nauk SSSR. Sibirskoye otdeleniye. Institut lesa i drevesiny. 2. Chlen-korrespondent AN SSSR (for Ivanov).
(Trees) (Shrubs) (Growth (Botany))

ACCESSION NR: AR4036033 S/0299/64/000/006/G008/G008

SOURCE: Referativny*y zhurnal. Biologiya, Abs. 6G45

AUTHOR: Ivanov, L. A.; Gulidova, I. V.; Tsel'niker, Yu. L.; Yurina, Ye. V.

TITLE: Photosynthesis and transpiration of woody species in different climatic zones

CITED SOURCE: Sb. Vodn. rezhim rast. v svyazi s obmenom veshchestv i produktivnost'yu. M., AN SSSR, 1963, 121-128

TOPIC TAGS: photosynthesis, transpiration, tree, climatic zone, drought, forest ecology

TRANSLATION: Generalized material is presented which was obtained in different climatic zones (Kadnikovsk forest preserve in Vologda oblast, Serebryanobrosk forest preserve in Moscow oblast, Tellermanovsk forest preserve in Voronezh oblast, Derkul'sk forest preserve in Lugansk oblast). The photosynthesis were determined by the method of Ivanov and Kossovich, usually on uncut shoots. Transpiration was determined by the method of rapid weighing. The data obtained on the principal forest species, the English oak and the birch, were analyzed in detail. Comparison of the average seasonal indices for the intensity of photosynthesis, respiration, and transpiration of the leaves showed that the species differences are masked by ecological ones. Under conditions of sufficient moisture, the ratio of

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ACCESSION NR: AR4036033

respiration to true photosynthesis did not show seasonal changes. During insufficiency of moisture, the proportion of respiration involved in the process of gas exchange increases from the beginning of the growth period to the summer, when drought occurs. Closed forests in various climatic zones differ little in the amount of leaf mass, but considerably in the formation of organic matter. If the amount of water consumed and organic matter formed for the Serebryanoborsk forest preserve is taken as 100%, the corresponding figures are 95 and 80%, for the Kadnikovsk forest preserve, 75 and 51% for the Tellermanovsk forest preserve and 48 and 40% for the Derkul'sk forest preserve. In a dry climate the proportion of matter consumed for respiration increases. Laboratoriya lesovedeniya AN SSSR (Forestry Laboratory, AN SSSR). 32 references. Ye. Yurina

DATE ACQ: 09Apr64 SUB CODE: LS ENCL: 00

Card 2/2

L 4121-66 EWT(d)/T IJP(c)

ACC NR: AP5028874 SOURCE CODE: UR/0038/65/029/002/0437/0470

AUTHOR: Ivanov, L. D. 44,55

ORG: none

TITLE: Differentiable functions of n variables 16,44,55

SOURCE: AN SSSR. Izvestiya. Seriya matematicheskaya, v. 29, no. 2, 1965, 437-470

TOPIC TAGS: variational calculus, function theory

ABSTRACT: The article discusses finite, l-times differentiable smooth functions of n real variables and proves that if $l \geq n$, then their multiplicity is (l/n)-integrable. Orig. art. has: 232 formulas. [JPRS]

SUB CODE: MA / SUBM DATE: 14Feb64 / ORIG REF: 009

Card 1/1 UDC: 517.5

IVANOV, L.D.

Analytic capacity of linear sets. Usp.mat.nauk 17 no.6:143-144 N-D '62. (MIRA 16:1)

(Functions, Analytic)

IVANOV, L.D.

Removable singularities of interior mappings. Izv. vys. ucheb. zav.; mat. no.1:81-84 '63. (MIRA 16:5)

1. L'vovskiy gosudarstvennyy universitet imeni I.Ya.Franko.
(Topology)

IVANOV, L.D.

Denjoy's hypothesis. Usp. mat. nauk 18 no.4:147-149 Jl-Ag '63.
(MIRA 16:9)

VITUSHKIN, A.G.; IVANOV, L.D.; MEL'NIKOV, M.S.

Incommensurability of the minimal linear measure with the set length. Dokl. AN SSSR 151 no.6:1256-1259 Ag '63. (MIRA 16:10)

1. Predstavleno akademikom A.N.Kolmogorovym.

IVANOV, L. D.

Smooth mappings of R_n in R_1 spaces. Dokl. AN SSSR 155 no. 2: 258-261 Mr '64. (MIRA 17:5)

1. Predstavleno akademikom A. N. Kolmogorovym.

IVANOV, L.D.

Determining the growth of smooth functions. Izv. AN SSSR. Ser. mat. 28 no.5:1131-1134 S-O '64. (MIRA 17:11)

IVANOV, L.D.

Differentiable functions of n variables. Izv. AN SSSR. Ser. mat. 29 no.2:437-470 '65. (MIRA 18:5)

L 43758-66 EWT(d) IJP(c)
ACC NR: AP6021356 SOURCE CODE: UR/0207/66/000/003/0058/0062

AUTHOR: Ivanov, L. D. (Melekess) 31 B

ORG: none 16

TITLE: Constructing a general solution to a system of multi-group transport equations

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 3, 1966, 58-62

TOPIC TAGS: transport equation, eigenvalue, function analysis, differential equation solution

ABSTRACT: The author considers a variant of proof for a theorem on the completeness of eigenfunctions within the (-1.1) and (0.1) range of variation of the angular variable. Eigenfunctions and eigenvalues are discussed, and two theorems are presented for a system of arbitrary functions Fi(t) and F'i(t), which satisfy Hoelder's boundary conditions at $/t/\leq 1/\sigma_0 = \Phi_0$ and $0 \leq t \leq 1/\sigma_0 = \Phi_0$, respectively. A simpler proof is given for the completeness of the eigenfunctions involved. The results of the calculations can be used in defining the critical size of a plane slab reactor and in solving Milne's problem in a multi-group approximation. The author thanks S. M. Feynberg for advice and for attention to the work. Orig. art. has: 24 formulas.

SUB CODE: 12/ SUBM DATE: 10Jun65/ ORIG REF: 001/ OTH REF: 004

Card 1/1 hs

ACC NR: AT7005813 (A,N) SOURCE CODE: UR/0000/66/000/000/0142/0149

AUTHOR: Ivanov, L. D.

ORG: none

TITLE: The critical size of a slab reactor

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Inzhenerno-fizicheskiye voprosy yadernykh reaktorov (Problems of nuclear reactor engineering and physics); sbornik statey. Moscow, Atomizdat, 1966, 142-149

TOPIC TAGS: nuclear reactor, boundary value problem, Fredholm equation, singular integral equation, free path, fission cross section, neutron spectrum

ABSTRACT: A general solution of a system of multi-group kinetic equations for an infinite slab reactor without a reflector is obtained. For critical size 2d, the following system must be solved:

$$\mu \frac{\partial \varphi_l(x,\mu)}{\partial x} + \frac{1}{l_l}\varphi_l(x,\mu) = \sum_{l=1}^{N} c_{ll} \int_{-1}^{1} \varphi_l(x,\mu')\,d\mu', \quad {}_{l=1,2,\ldots,N},$$

under the boundary conditions

$$\left.\begin{aligned} \varphi_l(-d,\mu) &= 0 \quad \mu > 0; \\ \varphi_l(d,\mu) &= 0 \quad \mu < 0, \end{aligned}\right\}$$

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ACC NR: AT7005813

where ℓ_i is the total free path in group i; μ the projection of the unit neutron-velocity vector onto the x axis;

$$c_{ij} = \frac{1}{2}\left[\sum_{\cdot}^{l-t} + \alpha^l \nu^l \sum_j^l\right];$$

and $\sum_{\cdot}^{l-t}$, $\sum_j^l$, ν^l, α^l are the transition cross section from group j to group i, the fission cross section in group j, the number of secondary neutrons, and the fission spectrum, respectively. A system of singular integral equations is obtained:

$$\Omega(t)\,h(t) + \hat{C}\,\hat{X}(t)\int_{-l_0}^{l_0}\frac{\nu h(\nu)}{\nu - t}\,d\nu = F(t).$$

A system of integral Fredholm equations for the spectral density and a formula for the critical condition are also obtained. The author thanks S. M. Feynberg, S. B. Shikhov, and O. V. Kazachkovskiy for discussion. Orig. art. has: 27 formulas, 1 graph, and 1 table.

SUB CODE: 18/ SUBM DATE: none/ ORIG REF: 002/ OTH REF: 004

Card 2/2

ACC NR: AT7005814 (A,N) SOURCE CODE: UR/0000/66/000/000/0150/0154

AUTHOR: Ivanov, L. D.

ORG: none

TITLE: The angular neutron distribution in a plane layer

SOURCE: Moscow. Inzhenerno-fizicheskiy institut. Inzhenerno-fizicheskiye voprosy yadernykh reaktorov (Problems of nuclear reactor engineering and physics); sbornik statey. Moscow, Atomizdat, 1966, 150-154

TOPIC TAGS: angular distribution, neutron distribution, boundary value problem, Fredholm equation, singular integral equation, neutron scattering

ABSTRACT: A plane layer irradiated by a neutron beam which strikes the surface at an arbitrary angle is examined. The following equation must be solved:

$$\mu\frac{\partial\psi(x,\mu)}{\partial x}+\psi(x,\mu)=\frac{c}{2}\int_{-1}(1+b\mu\mu')\psi(x,\mu')\,d\mu',$$

with the boundary conditions:

$$\psi(0,\mu)=\delta(\mu-\mu_0)\quad \mu>0,\quad \mu_0>0,$$
$$\psi(d,\mu)=0\quad \mu<0,$$

where $c=\frac{\Sigma_s}{\Sigma}$ is the number of secondary neutrons per collision; $b=3\overline{\cos\theta}$; $\overline{\cos\theta}$ is

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ACC NR: AT7005814

the mean cosine of the scattering angle; and d is the dimensionless thickness of the layer. A singular integral equation with a Cauchy-type kernel is obtained as

$$A_{\pm}(\mu)\,\Omega(\mu) + \int_0^1 \frac{cv}{2}\cdot\frac{1+v^2 b\,(1-c)}{v-\mu}\,A_{\pm}(v)\,dv = \psi_{\pm}'(\mu).$$

The Fredholm equation is examined, and the case of a semi-infinite layer is considered. The author thanks S. M. Feynberg for advice. Orig. art. has: 11 formulas.

SUB CODE: 20, 18/ SUBM DATE: none/ ORIG REF: 001/ OTH REF: 003

Card 2/2

PA 41/49T14

IVANOV, L.E.

USSR/Electricity
Power Plants, Electric
Distributors

Feb 49

"New 6 - 10 Kilowatt Distributor System," L. E. Ivanov, Docent G. M. Kayalov, G. M. Yavich, Engr, 3½ pp

"Elek Stants" No 2

Refers to L. I. Dvoskiy's article on construction of main distributor systems of 6 - 10 kw for electric stations and regional substations. Reveals a new construction guaranteeing considerable decrease of the structure's cubic capacity, due to more rational arrangement, without changing performance. Gives circuit-layout construction plan.

41/49T14

FDB

IVANOV, L. F.

1. SATEL', Ye. A. : SHILIN, A. I. : YELIZAVETIN, M. A. : VOSTOKOV, A. I. IVANOV, L. F.

2. USSR (600)

4. Grinding and Polishing

7. Machine for hydraulic polishing of cylinders. Stan. i instr. 23 no. 9, 1952

9. Monthly List of Russian Accessions, Library of Congress, January 1953. Unclassified.

BELIKOV, Yevgeniy Fedorovich, dotsent; VORONIN, Viktor Aleksandrovich, inzh.; GLOTOV, Georgiy Fedorovich, dotsent; ZELENKOV, Yuriy Vladimirovich, inzh.; IVANOV, Leonid Fedorovich, inzh.; KORENEV, Gleb Sergeyevich, inzh. [deceased]; MASLENNIKOV, Anatoliy Stepanovich, inzh.; SIROTKIN, Mikhail Pavlovich, dotsent; ULITIN, Andrey Il'ich, inzh.; URUSOV, Nikita Yur'yevich, inzh.; FLOROVSKIY, Yuriy Sergeyevich, inzh.; SHAKHIDZHANYAN, Grand Aleksandrovich, inzh.; NGLIT, Vitaliy Ivanovich, inzh.; VASIL'YEVA, V.I., red.izd-va; ROMANOVA, V.V., tekhn.red.

[Guidebook on principles of engineering geodesy used in planning and building hydroelectric power stations] Spravochnoe rukovodstvo po inzhenerno-geodezicheskim izyskaniiam pri proektirovanii i stroitel'stve gidroelektrostantsii. Pod obshchei red. E.F.Belikova. Moskva, Izd-vo geodez.lit-ry, 1960. 447 p. (MIRA 13:11)
(Hydroelectric power stations) (Geodesy)

26523
S/065/61/000/008/008/009
E194/E135

11,9700

AUTHORS: Demchenko, V.S., Morozov, G.A., Ivanov, L.F., and Mikutenok, Yu.A.

TITLE: Assessment of the lacquer forming tendencies of lubricating oils

PERIODICAL: Khimiya i tekhnologiya topliv i masel, 1961, No.8, pp. 53-58

TEXT: The authors discuss laboratory tests for assessing the effectiveness of multi-functional additives in heavy duty diesel engine lubricants. One method that has been proposed is due to K.K. Papok; it has been described in ГОСТ (GOST) 4953-49. Later the test was modernised and issued as GOST 9352-60. A very interesting method was described by S.K. Kyuregyan in his dissertation of 1959. Kyuregyan's apparatus preserves all the positive features of the revised Papok method and makes it possible to oxidise the oil in a thin layer on sliding metal surfaces. The present article gives test results with different lubricants on both instruments (Papok and Kyuregyan). The tests were made with lubricant МТ-16 (MT-16) made from Emba crude at

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Assessment of the lacquer forming ...

the Mendeleyev refinery and grade ДС-11 (DS-11) of high sulphur crude at the Novo-Kuybyshev refinery. The tests were made with experimental additives received from the VNII NP (All-Union Scientific Research Institute of the Petroleum Industry). In the Papok instrument to GOST 9352-60 the thermal and oxidation stability is expressed as the time in minutes during which the oil is converted to a lacquer residue under the test conditions. The lacquering tendency is also measured by the amount of lacquer formed at the end of the test time. Kyuregyan's instrument is illustrated in Fig.1. The oil sample is a thin (0.1 mm) layer on a ground steel ring 7, placed on a rotating plate 6 which is heated to a given temperature, and the time required for the oil to lose its lubricating properties by evaporation and lacquer formation is measured. The test is continued until there is a sharp increase in the angle of rotation of the loading disc 9, which is supported from the test ring by three aluminium (or iron or brass) supports 8 and is connected by the shaft 10 to the damper 11 and spring 12 which prevent the disc 9 from turning during the test. The time in minutes during which, under

Assessment of the lacquer forming ...

the test conditions, the oil loses its lubricating properties and is converted into a lacquer film is termed the lacquer formation time. The test results show that the ratio of the Kyuregyan lacquer formation time to the Papok thermal-oxidation stability is not a constant one but the order of rating of the different base oils with and without additives is the same in the two tests. In carrying out tests on the Kyuregyan instrument it was found that the curve of change of angle of rotation of the loading disc with time is different for different specimens. The form of this curve was found to depend primarily on the intensity of the accumulation of oxidation products in the oil. The significance of the shape of this curve was studied by making tests with different kinds of additives including the following and their components: thiophosphorus containing types ДФ-1 (DF-1), ИП-22 (IP-22), В-353 (V-353), В-354 (V-354) and ЗИТ-1 (ZIT-1). Alkyl-phenolic types В-350 (V-350), АзНИИ-7 (AzNII-7). Sulphonate types АзНИИ-5 (AzNII-5) and ПМС-19 (PMS-19). Some of the additives tested were mixtures of thiophosphorus containing compounds and alkyl-phenols. Thus additive В-360 (V-360) consists of the components

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Assessment of the lacquer forming ...

of V-350 and V-354. Additive B-361 (V-361) is made up of V-350 and V-353. Additive Аз-НИИ-8 (Az-NII-8) is produced by mixing sulphurised alkyl-phenolate of barium (additive АзНИИ-7 (AzNII-7) and barium sulphonate (the surface active component of additive АзНИИ-5 (AzNII-5). The additives containing thiophosphorus compounds, which are good anti-oxidants, gave slow reduction in the angle of rotation of the disc in the early part of the test. Oils with alkyl phenols and sulphonates show a marked reduction in the angle of rotation of the disc because these are not anti-oxidant additives and oxidation products are formed from the start of the test. It was found that additives containing thiophosphorus compounds are the best suppressors of lacquer formation. Particularly good results were obtained by adding to the oil an ester of thiophosphoric acid (component V-353) and zinc dithio-phosphate (component V-354). The influence of sulphonate additives and mixtures of sulphonate with alkyl phenol is much less but is greater with some feed stocks than with others. Additives and components of the alkyl phenol type (V-350 and AzNII-7) are intermediate in their ability to improve the stability

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Assessment of the lacquer forming ...

of a thin layer of oil. Test results obtained on a Kyuregyan instrument were in satisfactory agreement with the results of engine tests.
There are 3 figures, 1 table and 5 Soviet references.

IVANOV, L.G.

Voltage stabilizer. Put' i put.khoz. 4 no.8:28 Ag '60.
(MIRA 13:7)

1. Nachal'nik shpalopropitochnogo zavoda, Saratov.
(Voltage regulators)
(Railroads--Ties)

IVANOV, L.G.

Purification of industrial sewage. Put' i put. khoz. 5 no.3:10-11 Mr '61. (MIRA 14:3)

1. Nachal'nik shpalopropitochnogo zavoda, g. Saratov.
(Sewage--Purification)

IVANOV, L.G.

Useful suggestion. Put' i put.khoz. 5 no.10:22 O '61. (MIRA 14:10)

1. Nachal'nik Saratovskogo shpalopropitochnogo zavoda.
(Manometer)

GRINMAN Tsaak Grigor'yevich. Prinimali uchastiye: SAKBAYEV, Zh.M.; BLYAKH, G.I.; SHAGI-SULTAN, I.Z.; SIRAZUTDINOVA, Zh.A.; SHTEYN, N.S.; YERMAGAMBETOV, S.B.; KOZLOV, G.S.[deceased]; IVANOV, L.G.; OSHCHENSKIY, V.M.; DZHASYBEKOVA, E.K.; NURGALIYEVA, Kh. PRESNYAKOV, A.A., doktor tekhn. nauk, otv. red.; ALEKSANDRIYSKIY, V.V., red.

[Automation of nonferrous metal ore dressing processes] Avtomatizatsiia protsessov obogashcheniia rud tsvetnykh metallov. Alma-Ata, Izd-vo AN Kaz.SSR, 1964. 213 p. (MIRA 17:10)

1. Laboratoriya elektroniki i avtomatiki Instituta yadernoy fiziki AN Kaz.SSR (fo all except Grinman, Presnyakov, Aleksandriyskiy).

IVANOV, Leonid Ivanovich; AYDINOV, G., red.; TKRYUSHIN, M., tekhn.red.

[Siberian encounters; a journalist's notebook] Sibirskie vstrechi; iz zapisok zhurnalista. [Moskva] Izd-vo TsK VLKSM "Molodaia gvardiia," 1958. 102 p. (MIRA 11:5)
(Siberia—Description and travel)

IVANOV, L. I.

26(2) PHASE I BOOK EXPLOITATION SOV/2146

Leningrad. Universitet

Materialy po mashinnomu perevodu; sbornik 1 (Materials on Machine Translation; Collection of Articles No. 1) Leningrad, Izd-vo Leningr. univ., 1958. 228 p. 1,000 copies printed.

No contributors mentioned.

PURPOSE: The book is for students, scientists, and engineers interested in machine translation.

COVERAGE: This collection of 15 articles is published as volume I of the Materials on Machine Translation. It represents the work of 25 Soviet scientists at the Leningrad University Experimental Laboratory for Machine Translation which was created in March 1958 to continue research on translating with the aid of electronic machines. Although the present volume deals with both the theoretical and the practical aspect of machine translating, the emphasis is on the compilation of algorithms for a number of languages, many of them Asiatic. There are no references.

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AVAILABLE: Library of Congress

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TM/bg
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Ivanov, L.I.

IVANOV, L.I.

Seismic logging by means of refracted waves. Prikl. geofiz. no.17:130-136 '57. (MIRA 11:2)
(Seismic waves)
(Prospecting--Geophysical methods)

IVANOV, L.I.

Using seismic prospecting methods for studying gently sloping platform structures in Bashkiria. Geol. nefti i gaza 3 no.9: 50-57 S '59. (MIRA 13:1)

1.Trest Bashneftegeofizika.
(Bashkiria--Geology, Structural)
(Seismic waves)

BYSTROV, L.N.; VOLKOV, G.V.; IVANOV, L.I.

Equipment for the deposition of radioactive layers by the evaporation method. Trudy Inst.met. no.10:209-214 '62. (MIRA 15:8)

(Radioisotopes—Industrial application)
(Vapor plating—Equipment and supplies)

KUDRYAVTSEV, Ye.Ye., marksheyder; IVANOV, L.I., marksheyder.

Effect of mining operations upon the forest area of the Moscow Coal Basin. Ugol' 29 no.1:33-35 Ja '54. (MLRA 7:1)

1. Tul'skaya oblastnaya GOTI (for Kudryavtsev). 2. Trest Skuratovugol' (for Ivanov).
(Moscow Basin--Coal mines and mining) (Coal mines and mining--Moscow Basin) (Moscow Basin--Forests and forestry) (Forests and forestry--Moscow Basin)

IVANOV, L. I.

AID P - 2108

Subject : USSR/Mining

Card 1/1 Pub. 78 - 21/24

Author : Ivanov, L. I.

Title : Our experience with speedy repair-work of wells

Periodical: Neft. khoz., v.33, no.4, 91-92, Ap 1955

Abstract : The 1951 achievements of oil-well repair brigades working under the management of Malgobek-neft' (Malgobek Oil Management) are outlined.

Institution: None

Submitted : No date

IVANOV, L.I.

Operator Vladimir Arsen'ev's work shift. Dokl. AN Arm.SSR 24 no.2:18 '57. (MLRA 10:4)

1. Inzhener po normirovaniyu truda i zarplaty 2-go promysla neftepromyslovogo upravleniya.
(Oil wells--Equipment and supplies--Repairing)

ACCESSION NR: AT4013926 S/2659/63/010/000/0044/0046

AUTHOR: By*strov, L.N.; Ivanov, L.I.; Prokoshkin, D.A.

TITLE: A study of nickel diffusion in nickel-copper alloys

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya po zharoprochny*m splavam, v. 10, 1963, 44-46

TOPIC TAGS: nickel, nickel-copper alloy, diffusion coefficient, electrolytic nickel, nickel diffusion

ABSTRACT: A study has been made of the diffusion coefficient in pure electrolytic nickel and nickel-copper alloys. In laboratory scale experiments, three test specimens of alloys with 0.05, 1 and 10% copper, and one specimen of pure electrolytic nickel were used as strips 70 mm long, 8 mm wide and approximately 50 μ thick with solid copper plates, soldered at each end, serving as contacts. The radioactive isotope Ni^{63} was deposited in the middle section of the specimen by atomization in vacuum on one side only. The strips were heated many times to 1100-1300C by passing alternating current through pure helium. After every heating, radioactivity measurements were taken from each side of the strip. The results of the study showed that the diffusion coefficient was higher

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ACCESSION NR: AT4013926

for pure nickel and lower for its alloys (Ni-Cu). The energy of diffusion of Ni initially increases by a factor of 10-15 K. Cal./Mole when copper is added as shown in Fig. 1 of the Enclosure. Thus, this study confirmed the results of similar studies on Ni-Cu alloys by Kryukov and Zhukhovitskiy (Dokl. AN SSSR 90, no. 3, 1963), and by Reynolds et al. (Acta Met. 5 no. 1, 29, 1957). These studies were conducted with nickel-gold alloys, as the nearest system to Ni-Cu alloys. Orig. art. has: 2 figures, 1 formula and 1 table.

ASSOCIATION: Institut metallurgii AN SSSR (Metallurgical Institute AN SSSR)

SUBMITTED: 00 DATE ACQ: 27Feb64 ENCL: 01

SUB CODE: MM NO REF SOV: 002 OTHER: 001

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ACCESSION NR: AT4013926

ENCLOSURE: 01

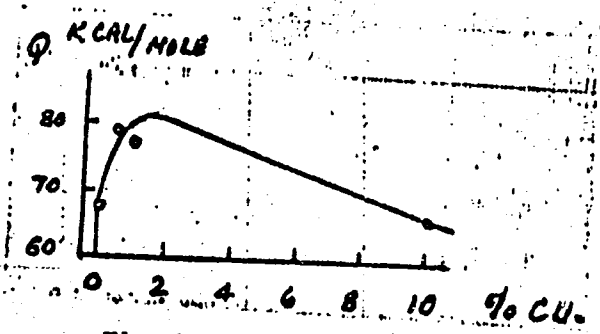

Fig. 1 Energy of activation of diffusion of nickel in nickel-copper alloys vs. copper content.

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ACCESSION NR: AP4013098 S/0126/64/017/001/0112/0117

AUTHORS: Ivanov, L. I.; Yanushkevich, V. A.

TITLE: Mechanism of steady-state creep in body-centered cubic metals at high temperatures. Creep in zirconium

SOURCE: Fizika metallov i metalloved.,v.17,no. 1, 1964, 112-117

TOPIC TAGS: zirconium, body centered cubic, steady state creep, shear modulus, self diffusion, subgrain, Burger vector, grain dislocation

ABSTRACT: The nature of high-temperature (1050-1380C) creep in the torsion of zirconium has been studied, using the IMET-4K instrument. Zirconium iodide rods (10 mm x 3 mm) were heat treated at 1200C for 45 minutes, then used as test specimens. The torsion speed per unit specimen length was varied between 0.005 to 50 degrees/cm·sec. The logarithm of creep rate in β-Zr is plotted as an inverse function of the temperature at various load moments. The activation energy of steady-state creep was determined at 35 ± 1.5 kcal/gm·atom. An analytic study of the inverse stress τ on a dislocation hinge acting at a point perpendicular to the slip plane and passing through the center of a subgrain of

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linear dimension L leads to the expression

$$\tau = \psi\eta\frac{mb}{H}.$$

where η - shear modulus, b - Burger vector, ψ - numerical coefficient related to hinge geometry, and η - coefficient defining the weakening of the elastic field on the dislocation subgrain boundary. A formula is also obtained for steady-state creep rate given by

$$\dot{\gamma} = \frac{20b\tau^3 D_0}{\psi^3\eta^3\mu^3 kT}\exp\left(-\frac{Q}{kT}\right).$$

where D_0 - pre-exponential therm in diffusion equation and Q - self-diffusion activation energy. This formula describes creep as a function of temperature and stress in a manner analogous to that given by J. Weertman (J. Appl. Phys., 1957, 28, 362, and 1955, 26, 1213) and is applicable in cases where there is a lack of dislocation source concentration. Orig. art. has: 12 formulas and 3 figures.

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ACCESSION NR: AP4013098

ASSOCIATION: Institut metallurgii im. A A. Baykova (Institute of Metallurgy)

SUBMITTED: 24May63 DATE ACQ: 26Feb64 ENCL: 00

SUB CODE: MM NO REF SOV: 007 OTHER: 008

Card 3/3

ACCESSION NR: AP4042023 S/0020/64/157/001/0147/0149

AUTHOR: By*strov, L. N.; Ivanov, L. I.; Spitsy*n, V. I. (Academician)

TITLE: Effect of γ-irradiation on the rate of aging of beryllium copper

SOURCE: AN SSSR. Doklady*, v. 157, no. 1, 1964, 147-149

TOPIC TAGS: gamma irradiation, beryllium copper, beryllium copper aging, gamma irradiation effect

ABSTRACT: The effect of γ-irradiation on the aging of beryllium copper (2.5% Be) annealed at 800C and water quenched was investigated by measuring the electric resistance at -196C (to eliminate the influence of the phonon component) of a wire 2 mm in diameter. The initial electric resistance of the wire at -196C was about 10^{-2} ohms. One of the two specimens used was subjected to repeated irradiation from radioactive cobalt (dose, 490 r/sec); the electric resistance (of both specimens) was measured after each irradiation. The magnitude $\Delta(R_{irrad}/R_{non-irrad})$ served as the criterion of the irradi-

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ACCESSION NR: AP4042023

ation effect. After a total irradiation dose of 125.10^7 r was reached, both specimens were annealed at 120C for about 500 hr, with periodical measurements of resistance. The results of the experiments are presented in a graph (see Fig. 1 of the Enclosure). The behavior of the irradiated specimen is explained as follows: the γ-irradiation caused formation of numerous crystallization centers of a new phase, but their growth was retarded by low temperature (room temperature). At 120C, however, new crystals begin to grow from these centers, and the resistance of the irradiated specimen increases more rapidly than that of non-irradiated specimens. As soon as the crystallization centers are consumed, the aging rate of irradiated specimen begins to decrease, and the relative electric resistance also decreases somewhat. Orig. art. has: 1 figure.

ASSOCIATION: Institut metallurgii im. A. A. Baykova (Institute of Metallurgy)

SUBMITTED: 05Jul63 ATD PRESS: 3077 ENCL: 01

SUB CODE: MM, NP NO REF SOV: 002 OTHER: 002

Card 2/3

BYSTROV, L.N.; IVANOV, L.I.

Effect of γ-radiation on the rate of beryllium bronze aging. Dokl. AN SSSR 157 no.1:147-149 Jl '64 (MIRA 17:8)

1. Institut metallurgii im. A.A. Baykova. Predstavleno akademikom V.I.Spitsynym.

IVANOV, L. I.

Agriculture & Plant & Animal Industry

"Omskii" State Farm. Moskva. Gos. izd-vo sel'khoz lit-ry, 1951.

9. Monthly List of Russian Accessions, Library of Congress, April 1953. Unclassified.

Moskalenskii State Sheep Breeding Farm. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1954. 77 p. (55-15075?)

1. Moskalenskii plemennoi ovtsevodcheskii sovkhoz. 2. Sheep breeding. I. Pashchenko, G.K., jt. au.

IVANOV, Leonid Ivanovich; SULKOVSKAYA, M.A., redaktor; ZUBRILINA, Z.P., tekhnicheskiy redaktor; VESKOVA, Ye.I., tekhnicheskiy redaktor

[With the American agricultural delegation in the Soviet Union; a journalist's notebook] S amerikanskoi sel'skokhoziaistvennoi delegatsiei po Sovetskomu Soiuzu; zapiski zhurnalista. Moskva, Gos. izd-vo selkhoz. lit-ry, 1956. 179 p. (MLRA 9:11)
(Agriculture)
(Russia--Relations (General) with the United States)

IVANOV L.I.

IVANOV, Leonid Ivanovich; NIKIFOROV, Konstantin Dmitriyevich, geroy sotsialisticheskogo truda; BERGAUZ, R.I., red.; GUREVICH, M.M., tekhn.red.

[Production economics and organization on state dairy farms; based on a study of the Severo-Liubin State Farm in Omsk Province] Ekonomika i organizatsiia proizvodstva v molochnom sovkhoze; na primere Severo-Liubinskogo sovkhoza Omskoi oblasti. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1957. 213 p. (MIRA 11:2)
(Dairying)

IVANOV, L.I., agronom.

Possibilities for developing livestock raising on state farms established on virgin land. Nauka i pered. op. v sel'khoz. 7 no.4:55-56 Ap '57. (MLRA 10:6)
(Omsk Province--Stock and stockbreeding)

IVANOV, Leonid Ivanovich; PYLAYEVA, A.P., red.; ZUBRILINA, Z.P., tekhn. red.

[Pattern for stockbreeding in Siberia] Tak nado vesti zhivotnovodstvo v Sibiri. Moskva, Gos. izd-vo sel'khoz. lit-ry, 1958. 79 p. (MIRA 11:7)
(Siberia--Stock and stockbreeding)

IVANOV, L.I.; FAYERSHTERN, Ya.D.

Outcome of discussions on the article by L.I.Ivanov and IA D. Faershtern "Assortment, quality and bottling of liqueurs and vodka." Spirt.prom. 20 no.4:14 '54. (MLRA 7:12)
(Ivanov, L.I.) (Faershtern, IA.D.) (Liquor industry)

TRUSOVA, S.A.; FERTMAN, V.K.; IVANOV, L.I., redaktor; RUPNITSKAYA, M.L., retsenzent; IVANOV, L.I., redaktor; MASLOVA, Ye.F., redaktor; KISINA, Ye.I., tekhnicheskiy redaktor.

[Production of spirituous juices from fresh and dried fruit and berries] Proizvodstvospirtovannykh plodo-iagodnykh sokov i morsov. Moskva, Pishchepromizdat, 1955. 98 p. (MLRA 8:12)
(Liquors) (Fruit juices)

FERTMAN, G.I.; SAVITSKIY, M.A., retsenzent; IVANOV, L.I., spetsredaktor; KRUGLOVA, G.I., redaktor; CHEBYSHEVA, Te.A., tekhnicheskiy redaktor

[Rectifying and beer rectifying apparatus] Rektifikatsionnyi i bragorektifikatsionnyi apparaty. Moskva, Pishchepromizdat, 1956. 91 p. (MLRA 9:8)
(Distillation apparatus)

TRUSOVA, Sof'ya Alekseyevna; FERTMAN, Valentina Konstantinovna; RUPNEVSKAYA, M.L., retsenzent; IVANOV, L.L., spetsredaktor; MASLOVA, Ye.F., redaktor; CHEBYSHEVA, Ye.A., tekhnicheskiy redaktor

[Aromatic spirits and infusions for the production of liqueurs and vodka] Aromatnye spirty i nastoi dlia proizvodstva likero-vodochnykh izdelii. Moskva, Pishchepromizdat, 1957. 140 p. (MLRA 10:5)
(Liquors)

IVANOV, L. I.

BUBLIY, Vasiliy Fedorovich; PYLIN, Vasiliy Alekseyevich; KOMAROV, A.F., kand.tekhn.nauk, retsenzent; IVANOV, L.I., inzh., retsenzent; RODZEVICH, V.I., kand.biol.nauk, spetsredaktor; KRUGLOVA, G.I.,red.; KISINA, Ye.I., tekhn.red.

[Storage and processing of grain in the manufacture of alcohol] Khranenie i podrabotka zerna v spirtovom proizvodstve. Moskva, Pishchepromizdat, 1957. 130 p. (MIRA 10:12)
(Grain handling)

IVANOV, L.I.

B-8

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physicochemical analysis. Phase transitions

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11148

Author : Ivanov L.I., Kulikov I.S., Matveyeva M.P.
Inst : Department of Technical Sciences, Academy of Sciences USSR
Title : Method for Determining Vapor Tension and Diffusion Constants

Orig Pub : Izv. AN SSSR, Otd. tekhn. n., 1955, No 8, 145-147

Abstract : A method has been developed for determining vapor pressure of components and diffusion constants in metal alloys. In a chamber are placed, one above the other, two samples of the same chemical composition one of which contains a radioactive isotope. The samples are placed into ceramic holders which are inserted in Mo-pans. A vacuum (10^{-6} - 10^{-7} mm Hg) is produced in the unit and heating is effected by means of an induction furnace. On heating the apparatus is disconnected from the pumps and a vapor pressure of the components of the alloy, corresponding to the experiment temperature, becomes established therein. A reaction of isotope exchange takes place between the samples. which can be followed by observing the radioactivity increase of the inactive sample. Temperature is measured

Card 1/2

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physicochemical analysis. Phase transitions

B-8

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11148

with a Pt - PtRh thermocouple and is regulated within $\pm 3^{\circ}$. To decrease the reverse flow of radioactive atoms the surface area of the inactive sample is made 20-30 times greater than that of the active. Absolute amount of evaporated component is determined, after cooling in vacuum, by comparison with radioactivity of a standard sample. Under the described conditions kinetics of isotope ecchange is determined by the rate of evaporation of the tagged component from the radioactive sample and the velocity of diffusion flow of tagged component from internal layers to the surface of radioactive sample. The inclination angle of the linear portion of $Q = f(t)$ curve (Q --amount of substance evaporated from the active sample) serves to determine the rate of evaporation. A formula for determining the diffusion coefficient has been derived. The method has been checked with technical iron over the temperature range 1120-1255°. A good agreement with literature data has been attained. If the rate of evaporation is high and the curve has no linear portion a diaphragm with a small aperture can be inserted between the samples.

Card 2/2

IVANOV, Lev Ivanovich; MATVEYEVA, Melitina Petrovna, kand.tekhn.nauk; UDAL'TSOV, A.N., glavnyy red.; TOLCHINSKIY, Ye.M., inzh.red.

[Methods and equipment for gauging the heat of sublimation of metals according to the rate of vaporation of open surfaces] Metod i ustanovka dlia izmereniia teploty sublimatsii metallov po skorosti ispareniia s otkrytoi poverkhnosti. Moskva, In-t tekhniko-ekon. inform. 1956. 10 p (Pribory i stendy. Tema 4, no.P-56-427)
(Heat of sublimation) (MIRA 11:3)

IVANOV, L. I.

USSR/ Physical Chemistry - Thermodynamics. Thermochemistry. Equilibrium. Physicochemical analysis. Phase transitions B-8

Abs Jour : Referat Zhur - Khimiya, No 4, 1957, 11120

Author : Ivanov L.I., Matveyeva M.P., Kulikov I.S.
Inst : Institute of Metallurgy of the Academy of Sciences USSR
Title : On the Problem of Determination of Thermodynamic Constants of Metals and Alloys

Orig Pub : In the Book: Issledovaniya po zharoprochnym splavam. M., Izd-vo AN SSSR, 1956, 11-16

Abstract : description of three methods for determining thermodynamic constants of metals and alloys, utilizing radioactive isotopes, which are used at the Institute of Metallurgy of the Academy of Sciences USSR. 1. Determination of the rate of evaporation from the amount of substance evaporated from open surface and condensed on cells cooled with liquid nitrogen. 2. Determination of rate of outflow of saturated vapor, into high vacuum, from closed space through calibrated opening. In both methods amount of condensate was determined radiochemically. Due to necessity of using high activities the instrument for method 2 has remote control means. Both

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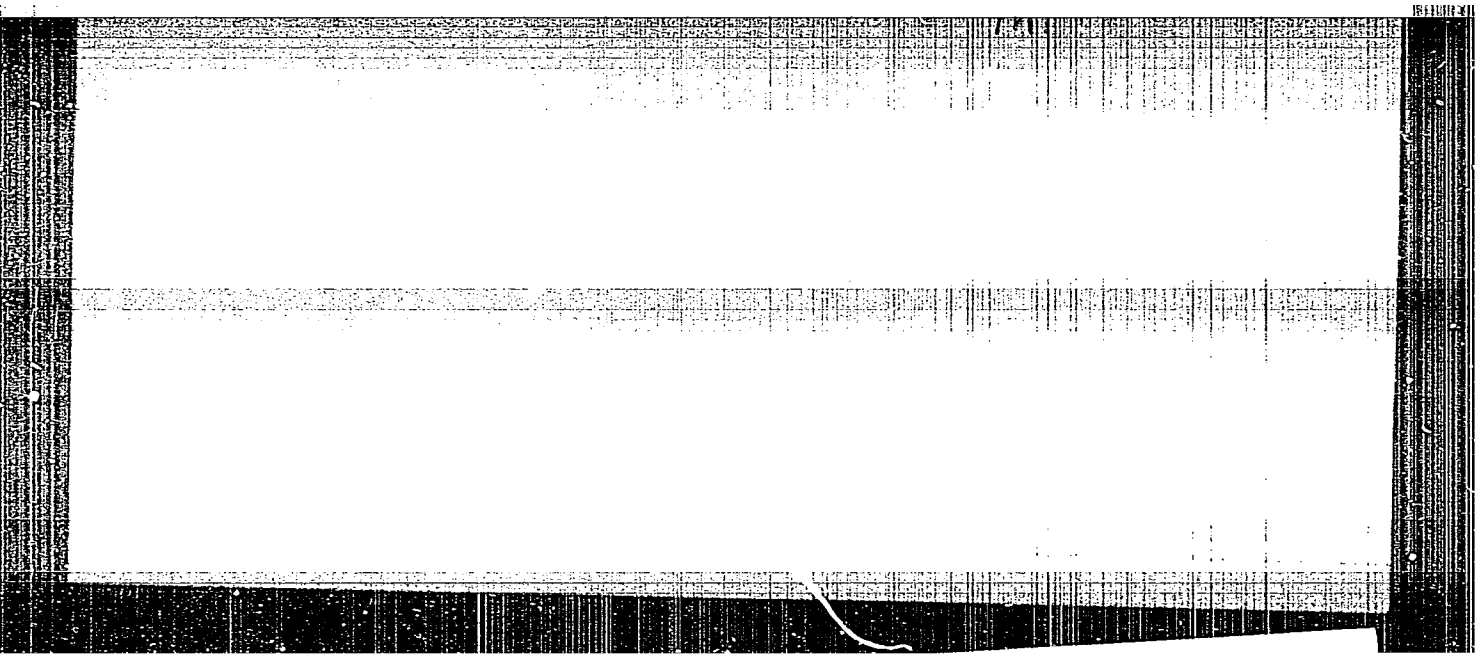

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IVANOV, L.I

Category : USSR/Solid State Physics - Phase Transformation in Solid Bodies E-5

Abs Jour : Ref Zhur - Fizika, No 2, 1957 No 3796

Author : Gudtsov, N.T., Ivanov, L.I., Matveyeva, M.P.
Title : Radioactive Methods of Metallophysical Investigations

Orig Pub : Vestn. AN SSSR, 1956, 26, No 3, 79-83

Abstract : Description of calculation methods and of instruments developed at the Institute of Metallurgy, Academy of Sciences, USSR, for the determination of the velocity of evaporation, vapor tension, and heat of sublimation of metals in the solid state. The use of radioactive isotopes makes it possible to investigate metals with low values of vapor tension at low temperatures.

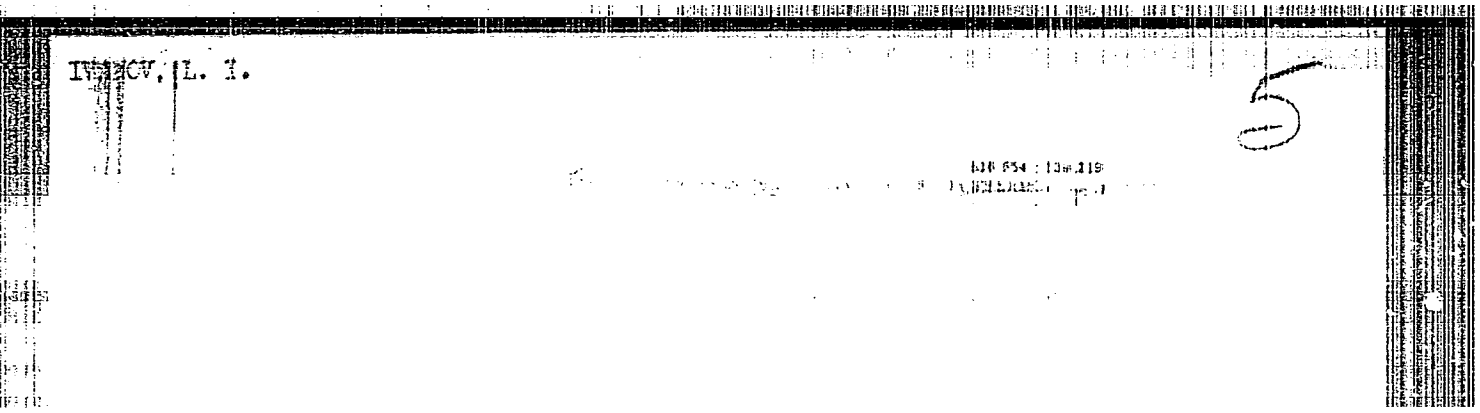
Card : 1/1

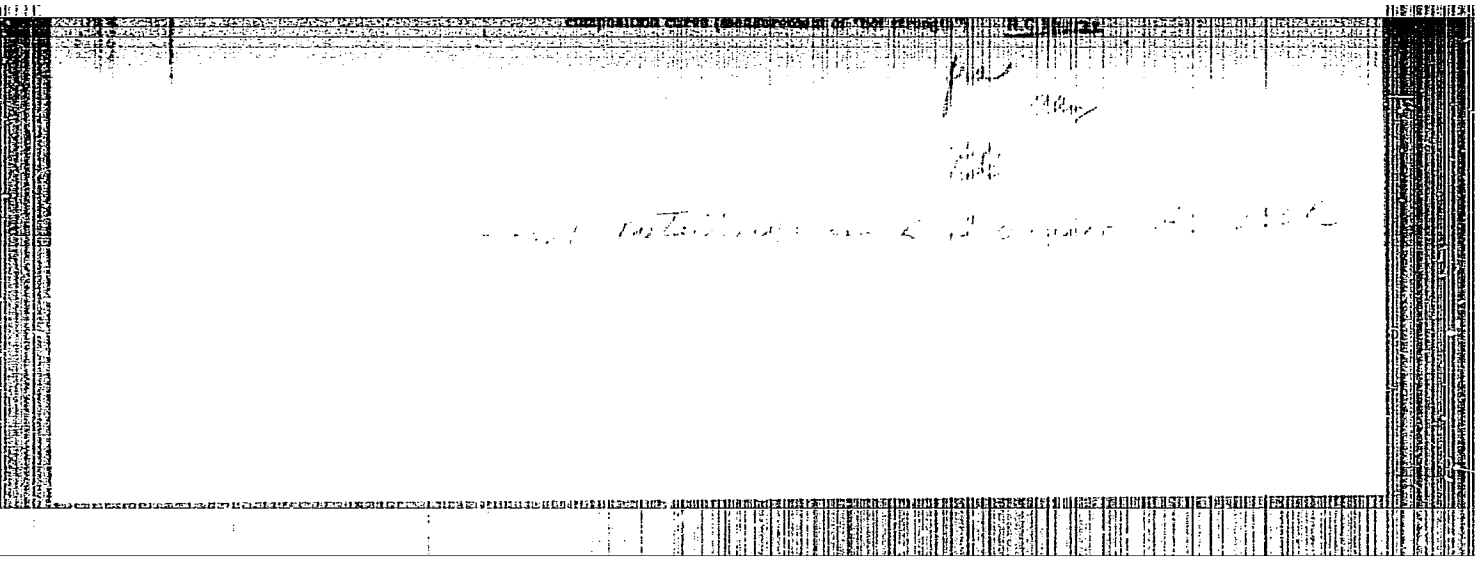
IVANOV, L. I.

"Elaboration and Application of the Methods of Isotope Exchange for the Thermodynamical Investigation of Some Double Alloys."

dissertation defended for the degree of Candidate of Technical Sciences at the Inst. for Metallurgy im. A. A. Baykov.

Defense of Dissertation (Jan-Jul 1957)
Sect. of Tech. Sci.
Vest. AN SSSR, 1957, v. 27, No. 12, pp. 120-122





APPROVED FOR RELEASE: 03/20/2001 CIA-RDP86-00513R000619110005-8"

IVANOV, L. I.

137-58-1-1984

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 1, p 266 (USSR)

AUTHORS: Ivanov, L. I., Matveyeva, M. P.

TITLE: A New Instrument for Studying the Vapor Pressure and Diffusion Constants of Metals by Isotope Exchange (Novyy pribor dlya izucheniya uprugosti para i diffusionnykh konstant metallov metodom izotopnogo obmena)

PERIODICAL: Tr. In-ta metallurgii. AN SSSR, 1957, Nr 1, pp 104-107

ABSTRACT: A method and instrument (I) based on the principle of isotope exchange for the purpose of investigation of the vapor pressure and the diffusion constants of metals are described. The Fe^{59} isotope is employed for study of industrial Fe and also of Fe in a number of its binary alloys. The isotope is introduced into the alloy by metallurgical methods. Measurement of the gamma activity was on a B-type apparatus. An AMM/4 tube was used as a counter [β radiation was not recorded in this study in order not to introduce corrections for self-absorption and reflection from the surface of the specimen (S)]. A tube was placed in a lead housing with a device making it possible to set the radioactive apparatus in a strictly determinate position

Card 1/3

A New Instrument for Studying the Vapor Pressure (cont.)

relative to the counter. In order to remove all gas from the metal, the extra specimen was first fused in vacuum. Industrial Fe was investigated in the 1120-1255° temperature interval. After a number of anneals of varying duration, the specific activity of the S was measured, and the amount of Fe condensing on the target was counted. Under conditions of unilateral exchange, i. e., under experimental conditions in which the area of the radioactive S is set at only 1/20 to 1/30 of the area of a non-radioactive specimen so as to reduce to a minimum the feedback of vaporized atoms, the solution of the problem of mass transfer for the concentration of isotope is analogous to the solution of the problem of heat transfer from a semi-infinite heat source in a medium the temperature of which remains zero. A method of calculation on the basis of the data of the kinetics of isotope exchange is presented, covering rate of evaporation, vapor pressure, and the coefficient of self-diffusion of industrial Fe. The data obtained were employed to derive the heat of sublimation of Fe, ΔH=97 kcal/g-atom, and the energy of activation of self-diffusion, Q=70 kcal/g-atom, which is completely in agreement with the literature data. A diagram and description of an I, making it possible to heat a number of pairs of disk-shaped S simultaneously, are presented. Dishes containing the S are placed in a special Mo adapter, which is placed in turn within a graphite heater. The use of a graphite heater permitting heating in vacuum

A New Instrument for Studying the Vapor Pressure (cont.)

to 1800°, in place of induction heating, makes possible a considerable stabilization of the experimental conditions and the creation of a uniform temperature within the adapter. Alloys of Fe and Cr were tested in the new I and their thermodynamic constants were determined.

L.G.

1. Metals--Vapor pressure--Measurement 2. Metals--Diffusion 3. Instrumentation--Applications 4. Instrumentation--Characteristics

Card 3/3

SOV/137-58-7-15610

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 7, p 242 (USSR)

AUTHORS: Matveyeva, M. P., Ivanov, L. I.

TITLE: Determination of the Heat of Solid-state Sublimation of Iron in Iron-chromium Alloys (Opredeleniye teploty sublimatsii zheleza v splavakh zheleza s khromom v tverdom sostoyanii)

PERIODICAL: V sb.: Issled. po zharoprochn. splavam. Vol 2. Moscow, AN SSSR, 1957, pp 52-56

ABSTRACT: The heat of sublimation (HS) was determined by the rate of evaporation. Two specimens of alloy of the same chemical composition are mounted in a ceramic cup, one facing the other at a distance of 1 mm. The cup is placed in a vacuum furnace ($\sim 10^{-7}$ mm Hg). One of the specimens contains a radioactive isotope of the constituent investigated. The specimens are heated to a specified temperature and held at this temperature for a specified time. The vapor pressure of the components of the alloy corresponding to the temperature of the experiment is established in the space between the specimens. A reaction of isotope exchange goes on between the samples, the rate of which is gaged by the growth of

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Determination of th . Heat of Solid-state Sublimation of Iron (cont.)

radioactivity in the specimen which had been originally inactive. To bring the reverse current to a minimum, the area of the nonradioactive specimen is made 20-30 times as large as the surface of the active specimen. The HS of iron in a number of Fe-Cr alloys (0.8-87.5% Cr) was investigated in the 1100-1250°C range. The relationship of the HS to the composition has the appearance of a curve with a maximum in the region of 50% Cr. At 0.8% 50%, and 87.5% Cr the ΔH_{Fe} is 98, 161, and 99.3 kcal/g.atom, respectively. The calculation of the variation in thermodynamic activity of the Fe in relation to the Cr content in the alloy shows that in the region of intermediate concentrations of Cr there exists a considerable negative deviation from the ideal. This indicates that in this region the interaction between like atoms is weaker than between unlike ones. This situation leads to the formation of α phase on lowering of the temperature. Data on the heat-resistance of Fe-Cr alloys likewise indicate that the highest resistance is possessed by alloys containing ~60% Cr.

1. Chromium-iron alloys--Properties 2. Iron--Sublimation
3. Radioisotopes--Applications

L. B.

Card 2/2

MATVEYEVA, M.P.; IVANOV, L.I.; BYSTROV, L.N.

Connection between thermodynamic values and the strength of alloys at high temperatures. Issl. po zharopr. splav. 3:50-55 '58.
(MIRA 11:11)
(Metals at high temperatures) (Alloys--Thermal properties)
(Crystal lattices)

SOV/24-58-8-3/37

AUTHORS: Ivanov, L.I. and Ivanchev, N.P. (Moscow, Sofia)

TITLE: Determination of the Parameters of Iron and Chromium in Some Alloys (Opredeleniye parametrov diffuziy zheleza i khroma v nekotorykh ikh splavakh)

PERIODICAL: Izvestiya Akademii Nauk SSSR, Otdeleniye Tekhnicheskikh Nauk, 1958, Nr 8, pp 15 - 18 (USSR)

ABSTRACT: In this paper, results are described of determining the diffusion parameters of iron and chromium in a number of alloys located in the α-range, at temperatures which are higher than the temperature of dropping out of the σ-phase. For determining the diffusion coefficients, a combined method was used, described by Borovskiy et al. (Ref 7). The starting materials were electrolytic iron and an electrolytic chromium. The alloys were smelted in a high-frequency furnace in a helium atmosphere. From these alloys, cylindrical specimens were produced. A radioactive Cr^{51} and Fe^{59} were deposited onto the polished surface of the specimens by evaporation from tungsten evaporators inside a specially designed vacuum chamber. For the simultaneous detection of the γ-radiation from the Cr^{51} and Fe^{59}, a method of counting, based on the application of a scintillation spectrograph,

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Determination of the Parameters of Iron and Chromium in Some Alloys

was used which was described in an earlier paper of the authors. For improving the accuracy, specially prepared specimens of the iron were used, by means of which the coefficient of discrimination of the iron was checked for each measured value. The composition of the deposited, active layer corresponded with an accuracy of up to 5% with the composition of the investigated alloy; the thickness of the layer did not exceed 1 μ . Two series of tests were carried out. The first of these was of a preliminary nature and it was preceded by annealing of the specimens at 1 200 °C for two hours. The second series was effected on specimens of 22 mm dia., 4 mm height. Prior to deposition of the radioactive layer, the specimens were sealed into quartz ampules which had a vacuum of 10^{-3} mmHg and were annealed in these ampules for 100 hours at 1 200 °C. The composition of the alloys investigated during the second test series is entered in Table 1, p 16. In Table 2 are entered the determined values of the diffusion coefficients and of the activation energies of the iron in the alloys, the composition of which is given

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in Table 1, and also the diffusion coefficient of chromium and the activation energy of the chromium in one of these alloys. The dependence of the diffusion of the iron and chromium on the inverse value of the temperature is graphed in Figures 1 and 2. In Figure 3, the dependence is graphed of the activation energy of iron on the composition of the alloy in accordance with the data of Shinyayev (Ref 6) as well as the data obtained by the authors of this paper. Exponential relations are included in the paper (p 17), which permit expressing the temperature dependence of the diffusion coefficients of iron and chromium. It can be seen that in alloys with high iron contents, there is good agreement between the values obtained by the authors of this paper and those of Shinyayev (Ref 6). However, for the alloy containing 82% Cr, the Q_{Fe} measured by the authors of this paper was considerably lower. In Figure 4, the values of K_{Fe} as a function of the composition are graphed. It can be seen from this graph that K_{Fe} remains almost unchanged in alloys which are rich in iron and increases strongly

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on transition to chromium-base alloys reaching the value of 0.83 for an alloy containing 82% Cr.
There are 4 figures, 2 tables and 12 Soviet references.

ASSOCIATION: Institut metallurgii AN SSSR (Institute of Metallurgy of the Ac.Sc.USSR) and Fizicheskiy institut Bolgarskoy Akademii Nauk (Physics Institute of the Bulgarian Academy of Sciences)

SUBMITTED: February 1, 1958

1. Iron--Diffusion 2. Chromium--Diffusion 3. Diffusion--Analysis
4. Alloys--Properties 5. Radioisotopes--Applications

18(7) PHASE I BOOK EXPLOITATION SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po problema zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-Resistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p. Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva; Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov, Academician; N. V. Ageyev; Corresponding Member, USSR Academy of Sciences; I. A. Oding, I. M. Pavlov, and I. P. Zudin, Candidate of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various problems in the structural metallurgy of heat-resistant alloys. Some are concerned with theoretical principles, some with descriptions of new equipment and methods, others with properties

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of specific materials. Various phenomena occurring under specified conditions are studied and reported on. For details, see Table of Contents. The articles are accompanied by a number of references, both Soviet and non-Soviet.

Studies (Cont.) SOV/3355

Bystrov, L. N., and I. I. Ivanov. Device for Measuring the Heat Capacity of Metals and Alloys at High Temperatures 375

Rudnitskiy, A. A. Precious Metal Thermocouples for Measurement of High Temperatures 380

Osipov, V. G. State of Stress in the Deformation of Round Blanks 385

Mukhed, G. M. Determination of the Resistance of Metals and Alloys to Deformation at High Temperatures 392

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IVANOV, L. I.

24(8)

PHASE I BOOK EXPLOITATION SOV/2117

Soveshchaniye po eksperimental'noy tekhnike i metodam vysokotemperaturnykh issledovaniy, 1956

Eksperimental'naya tekhnika i metody issledovaniy pri vysokikh temperaturakh: trudy soveshchaniya (Experimental Techniques and Methods of Investigation at High Temperatures; Transactions of the Conference on Experimental Techniques and Methods of Investigation at High Temperatures) Moscow, AN SSSR, 1959. 789 p. (Series: Akademiya nauk SSSR. Institut metallurgii. Komissiya po fiziko-khimicheskim osnovam proizvodstva stali) 2,200 copies printed.

Resp. Ed.: A.M. Samarin, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: A.L. Bankvitser.

PURPOSE: This book is intended for metallurgists and metallurgical engineers.

COVERAGE: This collection of scientific papers is divided into six parts: 1) thermodynamic activity and kinetics of high-temperature processes 2) constitution diagram studies 3) physical properties of liquid metals and slags 4) new analytical methods and production of pure metals 5) pyrometry, and 6) general questions. For more specific coverage, see Table of Contents.

Vatolin, N.A., and O.A. Yesin. Solubility of Carbon in Iron Alloyed With Various Elements 88

A study was made of the effect of phosphorus, chromium, manganese, sulfur, and vanadium on the solubility of carbon in liquid iron, and also of silicon on the solubility of carbon in molten manganese and ferrochrome. It was shown that regularities observed in the effect of the nature and concentration of the addition, as well as of the temperature, can be qualitatively explained with the aid of the theory of regular solutions.

Ivanov, L.I., I.S. Kulikov, and M.F. Maiyeyeva. Methods of Measuring the Thermodynamic Constants of Metals and Alloys at High Temperature 96

An apparently reliable method was developed for determining the heat of sublimation of metals, making use of the principle of isotope exchange in the gaseous phase of metals. The use of radioactive isotopes permits the determination of partial values of the following thermodynamic constant: rate of vaporization, vapor pressure, heat of sublimation, and the individual thermodynamic activity of each of the elements of the alloy.

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IVANOV, L.I.; BYSTROV, L.N.

Ustanovka dlya vysokotemperaturnogo issledovaniya polzuchesti metallov v vakuume ili inertnoy atmosfere.

report submitted for the 5th Physical Chemical Conference on Steel Production.

MOSCOW - 30 JUN 1959

BYSTROV, L.N.; IVANOV, L.I.

Equipment for measuring the heat capacity of metals and alloys at high temperatures. Issl.po zharopr.splav. 4:375-379 '59. (MIRA 13:5)
(Metals--Thermal properties)

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SOV/180-59-6-6/31

AUTHORS: Bystrov, L.N., Ivanov, L.I., and Prokoshkin, D.A. (Moscow)

TITLE: Investigation of High Temperature Creep of Iron by the Torsion Method

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1959, Nr 6, pp 37-42 (USSR)

ABSTRACT: It is a well known fact that the rate of creep is temperature-dependent and that this relationship can be described by a general formula

$$u = ke^{-Q/RT} \qquad (1)$$

where: u is rate of creep; k is structure-sensitive, pre-exponential factor whose magnitude is greatly affected by the structure of the alloy; T is absolute temperature; Q is a parameter characterizing the energy of the process, the magnitude of which has been postulated to depend on the temperature and on the magnitude and character of the applied stress. Since various conclusions on the character of the temperature and stress dependence of Q had been reached by various workers who had studied creep of specimens in tension, the present investigation was undertaken with the object

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of determining the relationship between Q, temperature and stress, by studing creep of iron subjected to pure shear stress. The experiments were carried out in a specially designed vacuum apparatus, shown diagrammatically in Fig 1. The test piece (1), in the form of a cylinder of 2 - 3 mm diameter, 14 mm gauge length, with square cross section ends, was held by two molybdenum grips (2 and 3); the grip (2) was free to rotate and carried a lever (4) with a weight (5) which generated the moment M; the weight of the lever was compensated by a counterweight (6); the grip (2) rotated on ball bearings (7) supported by a water-cooled housing and coated with silver or MoS_2; the grip on the right-hand side was connected to an electric motor through a worm reducing gear. Departure of lever (4) from its original, horizontal position, resulted in breaking the contact (9), connected with a low inertia, electronic relay which switched on the electric motor, rotating at a rate u in the direction opposite to that in which the creep specimen rotated (at a rate u_1) under the action of the applied torque. Depending upon

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Investigation of High Temperature Creep of Iron by the Torsion Method

the relative values of u and u_1, the engine was switched off and on by means of contacts (9) and (10), so that the specimen was deformed under the condition of constant torque; contact (11) served to switch off the complete apparatus after rupture of the specimen. A typical creep curve of γ-iron, tested at 1100-1180 °C, under M = 0.88 kg cm, is reproduced in Fig 2, where the deformation, indicated on the ordinate axis in multiples of 360°, is plotted against time (min), I representing the primary creep stage, II and III the secondary stage at 1100 and 1180 °C respectively, and IV the third stage of creep. The test pieces were prepared from two types of electrolytic iron (for chemical analysis see Table 1), re-melted in vacuum and forged; each test piece was annealed at 1260 °C for 30 min. To eliminate the effect of the possible difference between the properties of test pieces of the same nominal composition on the experimental results, the creep rates at various temperatures were determined on one and the same test piece; the accuracy of the obtained data was confirmed

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